STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

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June 22, 1994

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Greg Smith, Geotechnical Unit
John Frye, P.E., Structure Design
Danny Burwell, P.E., Location & Surveys
John Alford, P.E., Roadway Design
Dana V. Brantley, P.E., DeLeuw Cather

update shoulder widths

FROM: Philip D. Edwards PDE
Planning and Environmental Branch

SUBJECT: US 74 Bypass, Four Lane Divided Freeway on New Location, Shelby, Cleveland County, TIP # R-2707

"In-House Scoping Meeting"

An "In-House" scoping meeting is scheduled for Friday, July 1, 1994, at 1:30 p.m. in Room 470 of the Highway Building to discuss pertinent information which should be included in both the technical reports and the final document. Please be prepared to provide guidelines of what is expected as it concerns your particular area of expertise.

If you can not attend the meeting, please send your comments by June 29, 1994.

If you need additional information please do not hesitate to call. Thank you for your assistance.

PDE

attachments

FEASIBILITY STUDY

Shelby
US 74 Bypass
Cleveland County
R-2707

Prepared by
Program Development Branch
Division of Highways
N.C. Department of Transportation

Thomas E. Devens
Highway Planning Engineer

Mohammed B. Mustafa
Highway Planning Engineer

11/4/91
Date

Whitmel H. Webb, III, P.E.
Head of Feasibility Studies

FEASIBILITY STUDY

Shelby
US 74 Bypass
Cleveland County
R-2707

I. GENERAL DESCRIPTION

This is a feasibility study for a US 74 Bypass of Shelby in Cleveland County (See Figure 1). This study recommends a 9.4 mile southern bypass on new location. The recommended typical section is a four-lane highway divided by a 46-foot median, on 200-feet of right of way. Estimated cost of the project is $82,240,000 ($11,540,000 for right-of-way and $70,700,000 for construction).

This study is not a detailed planning/environmental investigation. A feasibility study presents recommended cross sections for improvements, general alignments of improvements, and estimated cost of construction and right of way. This study attempts to identify any potential environmental, permitting, or other observed issues which deserve consideration in the planning and construction stages.

II. NEED FOR PROJECT

This project was requested by the City of Shelby. Although a US 74 Bypass exists in Shelby, the existing road has safety and capacity deficiencies. These will become more serious as traffic increases. Strip development and frontage roads on US 74 Bypass have necessitated a series of traffic signals which create delays for through traffic. A new bypass is needed to provide a high-speed facility to bypass Shelby. Currently, the principal route from Asheville to Charlotte is I-26, connecting with I-85 in South Carolina (See Figure 2). With the construction of US 74 (Project R-99: a four-lane median-divided facility) from Columbus to Forest City, US 74 will likely replace I-26/I-85 as the shortest multilane route from Asheville to Charlotte. Travel distance will be decreased by 15 miles between Asheville and Charlotte by using the I-26/US74/I-85 route.

The 1979 mutually adopted Shelby Thoroughfare Plan shows a bypass corridor on the north side of Shelby. This corridor allows the proposed roadway to serve both as a bypass and as an outer arterial to relieve congestion in Shelby.

Existing US 74 Bypass is classified as an Urban Principal Arterial in the Statewide Functional Classification System, and is also a part of the Federal Aid Primary System (FAP-18-1).

Existing US 74 Bypass consists primarily of a 4-lane highway divided by a 30-foot grass median, with a 24-foot pavement and unpaved shoulders ranging from 8 to 12 feet wide per direction of travel (See Figure 3). Right-of-way varies from 150 to 200-feet, with partial control of access. The existing bypass is located in the center of Shelby, and serves local traffic as well as traffic traveling through Shelby. Land use is predominantly retail and commercial. A continuous two-lane frontage road exists on each side of US 74 Bypass for a third of the length through Shelby. The service roads have access points to US 74 spaced roughly every 0.1 mile.

Project R-519 intersects the proposed southern bypass alignment (See Figure 4). Project R-519 consists of extending NC 150 as a four-lane curb and gutter section on a new location from south of Shelby to Dekalb Street south of the existing US 74 Bypass.

Estimated 1990 Average Daily Traffic (ADT) on existing US 74 Bypass ranges from a low of 15,200 vehicles per day (vpd) on the east end, to 23,100 vpd near NC 226. By the design year of 2011, anticipated traffic is estimated to range from 30,000 to 46,200 vpd.

III. RECOMMENDATIONS

It is recommended that a new bypass be constructed on new location on the south side of Shelby (See Figure 4). The recommended typical cross section consists of two 12-foot lanes with 2-foot inside and outside paved shoulders in each direction divided by a 46-foot median. The recommended pavement width in each travel direction is 28 feet. Project length is 9.4 miles. The new roadway is to be constructed on 200-feet of right of way with full control of access.

A southern bypass alignment is recommended for several reasons. A bypass is intended to serve through traffic, not local. A southern corridor should function better as a bypass, since it is less circuitous and 1.2 miles shorter than a northern route. A southern corridor avoids the congested and densely developed northern portion of Shelby. This reduces the chance that, like the existing US 74 Bypass, the new bypass would soon be congested and converted into an arterial serving local traffic instead of through traffic. The southern alignment would have less than half of the impacts upon residential and business development, requiring fewer relocatees. Since the Shelby

Municipal Airport is in southwest Shelby, a southern corridor would improve access to the airport. A freeway-type facility can divide a community, therefore a bypass to the south of Shelby is preferable in this respect. Density of development in southern Shelby is far less than the north, so a bypass will not divide communities to the extent that would occur on the north side of Shelby. Also, the southern corridor does not pass near the Kings Mountain Reservoir area, therefore the project would not impact its watershed. Fewer historic sites are located on the south side, and there is more opportunity to revise alignments should any sites be identified.

The disadvantage of a southern bypass is that it may not alleviate the need for an arterial on the north side of Shelby, whereas a northern bypass might. The Statewide Planning Unit of NCDOT recommends a northern bypass, since it could function both as a bypass and as an arterial serving local traffic. The southern bypass alternative is an estimated $1,530,000 more expensive than a northern bypass.

The southern bypass will require 13 grade separations, 6 bridges, four reinforced-concrete box culverts, and five interchanges (See Figure 4).

Approximately 1.5 miles of two-lane, 28-foot pavement frontage road will be required to provide continuity on roads which are divided by the bypass.

As shown in Figure 4, the southern bypass corridor passes just north of the Joseph Suttle Plantation. Due to the historical significance of the property, a bypass should not disturb the plantation. Also, Federal Aviation Regulations require a Runway Protection Zone (RPZ) which begins 200-feet beyond the end of the Shelby Municipal Airport runway. Since the RPZ extends over the southern portion of the Suttle Plantation, there is no room for a highway facility south of the Suttle Plantation. Furthermore, should Shelby desire to expand airport facilities in the future, the north end of the runway is more desirable to extend due to vertical alignment of the runway.

Total project cost is estimated at:

Right of Way	$ 11,540,000
Construction	$ 70,700,000
Project Cost	$ 82,240,000

IV. OTHER COMMENTS AND CONCERNS

An environmental screening was not conducted for this study. A southern bypass will impact upon forest land, some near creeks and rivers. It is unknown whether any habitats in the project area are suitable to protected or endangered species. Corps of Engineers Individual Permits may be required, since the alignment crosses the First Broad River, Buffalo Creek, and Hickory Creek. No public parks would be affected.

The proposed corridor of the southern bypass passes 0.3 mile north of the Joseph Suttle House and plantation, a property listed in the National Register of Historic Places (See Figure 3). This property includes 128 acres and is an excellent example of plantation architecture of the early 1800's. The plantation is located just east of SR 1151 in south Shelby, and is bounded by SR 1121, the First Broad River, and SR 1136.

The present corridor of the southern bypass will likely cause an estimated 10 business and 51 residential relocatees.

V. ALTERNATIVES STUDIED BUT NOT RECOMMENDED

A northern route was evaluated for feasibility as a bypass (See Figure 3). The length of new construction required would be approximately 9.5 miles, 0.1 mile longer than the southern route. However, the northern route utilizes existing US 74 Bypass for a combined 1.1 miles more on both the east and west side of Shelby. Therefore, traffic bypassing Shelby would have to travel 1.2 miles further with the northern alternative. The northern corridor passes through much denser development, therefore more relocatees would be expected, as well as higher right-of-way costs. The corridor shown in the attached figures was chosen to minimize impacts upon development. If historical, environmental, or engineering problems are identified in the future, this corridor is very inflexible to change. Minor shifts could cause considerable impact upon development and may increase project cost.

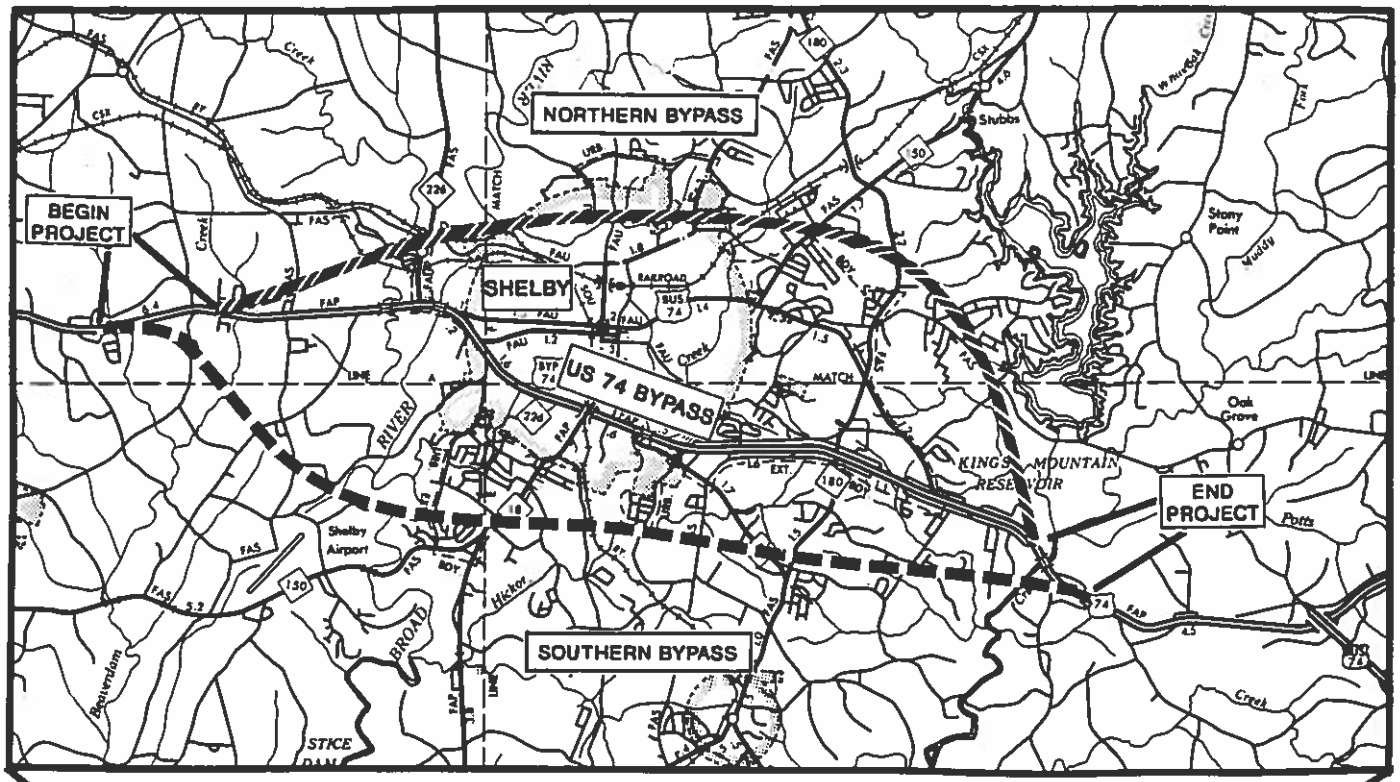
A northern bypass with full control of access would divide neighborhoods and commercial development on the north side of Shelby, especially on the western side. It is estimated that this alignment would cause the relocation of 108 residences and 13 businesses. The eastern end of the northern corridor falls within the one-mile critical area of the Kings Mountain Reservoir, and may impact water quality.

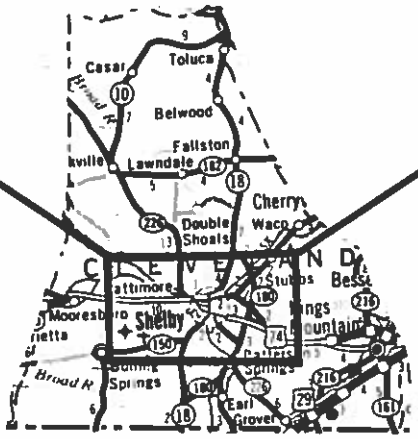
This corridor would require the construction of 9 grade separations, 12 bridges, three reinforced-concrete box culverts, and four interchanges.

Estimated cost of the northern bypass alternative is:

Right of Way	$ 20,310,000
Construction	$ 60,400,000
Project Cost	$ 80,710,000

The current corridor of the northern bypass would affect two properties which may be eligible for the National Register of Historic Places (See Figure 4). The Burwell-Blanton House is located on US 74 near its intersection with SR 1123. The Gibney-Spake House is located at the intersection of Spake Circle and NC 150. This house, which appears to date from the late nineteenth-century, retains its integrity and may prove to be eligible for the National Register. The present corridor of the northern bypass directly impacts this house. Scattered development to the west of Shelby will accommodate an alignment shift to minimize impact upon the Burwell-Blanton House; however a shift in alignment to avoid the Spake-Gibney House may cause a considerable increase in right-of-way costs.





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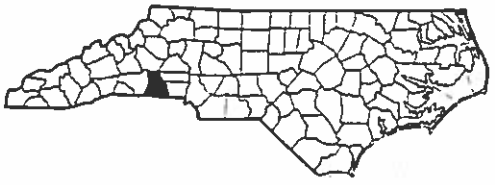

FEASIBILITY UNIT

SHELBY

US 74 BYPASS
CLEVELAND COUNTY
R-2707

SCALE: 1" = 2 MILES DATE: JULY 1991

FIGURE 1

ASHEVILLE

INTERSTATE 26

US 74 UNDER CONSTRUCTION

NORTH CAROLINA

SOUTH CAROLINA

INTERSTATE 26

INTERSTATE 85

US 74

I-85

I-26 / I-85

US 74

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FEASIBILITY UNI

PRIMARY MULTILANE ROUTI
BETWEEN
ASHEVILLE AND CHARLOTT

DATE: SEP 1991

FIGURE 2

INDEX OF COUNTIES

	ALBEMARLE	ASHEBORO	ASHEVILLE	BLOWING ROCK	BOONE	BURLINGTON	CAPE HATTERAS	CHAPEL HILL
Paccolet	41							
Chester	157	181						
Columbia	117	132	86					
	128	124	95	9				
	79	39	200	149	140			
	350	308	487	443	431	297		

FEASIBILITY UNI

TOPOGRAPHIC MAP

SHELBY

US 74 BYPASS

NORTH AND SOUTH ALTERNATIVES

CLEVELAND COUNTY

R-2707

DATE: JULY 1991

CONTOUR INTERVAL 20 FEET

FIGURE 4

NORTHERN BYPASS

SHELBY

SOUTHERN BYPASS

GIBNEY-SPAKE HOUSE

BURRELL BLANTON HOUSE

JOSEPH SUTTLE PLANTATION

R-819 EXTENSION OF NC 150

SECTION A-B

N

LEGEND

GRADE SEPARATIONS OR BRIDGE/CULVERTS

CONTOUR INTERVAL 20 FEET